

Facility Name: Solvents Recovery Service

Location: 1200 Sylvan St. Linden Union Co.

EPA Region: II

Person(s) in Charge of the Facility: \_\_\_\_\_

Name of Reviewer: David Vastek Date: 1/4/89

**General Description of the Facility:**

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

SRS is a 10 acre site in Linden, Union Co.  
operation since 1944. Their three major operations  
are solvent recovery, fuel blending and custom  
distillation. The site has severe groundwater contamination.  
A fire and explosion in the past caused a release to  
surface water. SRS has had numerous air releases. The potential  
exists for future releases due to the highly volatile nature of materials used.

**Scores:**

HRS  $S_M = 31.8$  ( $S_{GW} = 53.06$   $S_{SW} = 14.54$   $S_A = 0$  )

PRO  $S_M = 49.96$  ( $S_{GW} = 53.06$   $S_{SW} = 14.54$   $S_A = 66.6$  )

HRS COVER SHEET

248726



Ground Water Route Work Sheet						
Rating Factor	Assigned Value (Circle One)	Multi- plier	HRS	Max. Score	PRO	
<b>1</b> Observed Release	0 <b>(45)</b>	1	45	<b>(45)</b>	45	
If observed release is given a score of 45, proceed to line <b>4</b> . If observed release is given a score of 0, proceed to line <b>2</b> .						
<b>2</b> Route Characteristics						
Depth to Aquifer of Concern	0 1 2 3	2		6		
Net Precipitation	0 1 2 3	1		3		
Permeability of the Unsaturated Zone	0 1 2 3	1		3		
Physical State	0 1 2 3	1		3		
Total Route Characteristics Score				15		
<b>3</b> Containment	0 1 2 3	1		3		
<b>4</b> Waste Characteristics						
Toxicity/Persistence	0 3 6 9 12 15 <b>(18)</b>	1	18	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 <b>(8)</b>	1	8	8	8	
Total Waste Characteristics Score			26	26	26	
<b>5</b> Targets						
Ground Water Use	0 1 <b>(2)</b> 3	3	6	9	9	
Distance to Nearest Well/Population Served	0 4 8 12 16 18 <b>(20)</b> 24 24 30 32 35 40	1	20	40	40	
Total Targets Score			26	49	49	
<b>6</b> If line <b>1</b> is 45, multiply <b>1</b> x <b>4</b> x <b>5</b> If line <b>1</b> is 0, multiply <b>2</b> x <b>3</b> x <b>4</b> x <b>5</b>			30420	57.330		
<b>7</b> Divide line <b>6</b> by 57.330 and multiply by 100			S <sub>gw</sub> = 53.06		53.06	

Surface Water Route Work Sheet							
Rating Factor	Assigned Value (Circle One)	Multi- plier	HRS	Max. Score	PRO		
<b>1</b> Observed Release	0      45	1	45	45	45		
If observed release is given a value of 45, proceed to line <b>4</b> . If observed release is given a value of 0, proceed to line <b>2</b> .							
<b>2</b> Route Characteristics							
Facility Slope and Intervening Terrain	0 1 2 3	1		3			
1-yr. 24-hr. Rainfall	0 1 2 3	1		3			
Distance to Nearest Surface Water	0 1 2 3	2		6			
Physical State	0 1 2 3	1		3			
<b>Total Route Characteristics Score</b>				15			
<b>3</b> Containment	0 1 2 3	1		3			
<b>4</b> Waste Characteristics							
Toxicity/Persistence	0 3 6 9 12 15 <b>18</b>	1	18	18			
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	8	8			
<b>Total Waste Characteristics Score</b>			26	26	26		
<b>5</b> Targets							
Surface Water Use	0 1 <b>2</b> 3	3	6	9	6		
Distance to a Sensitive Environment	0 <b>1</b> 2 3	2	2	6	2		
Population Served/Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	0		
<b>Total Targets Score</b>			8	55	8		
<b>6</b> If line <b>1</b> is 45, multiply <b>1</b> x <b>4</b> x <b>5</b> If line <b>1</b> is 0, multiply <b>2</b> x <b>3</b> x <b>4</b> x <b>5</b>			9360	64,350	9360		
<b>7</b> Divide line <b>6</b> by 64,350 and multiply by 100			S <sub>sw</sub> = 14.54		14.54		

# AIR ROUTE WORK SHEET

Rating Factor	Assigned Value (Circle One)	Multi-plier	HRS	Max. Score	PRO
<b>1</b> Observed Release	0                  45	1	0	45	45
Date and Location:					
Sampling Protocol:					
If line <b>1</b> is 0, the S = 0. Enter on line <b>3</b> . If line <b>1</b> is 45, then proceed to line <b>2</b> .					
<b>2</b> Waste Characteristics					
Reactivity and Incompatibility	0 1 2 <b>3</b>	1		3	3
Toxicity	0 1 2 <b>3</b>	3		9	9
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 <b>8</b>	1		8	8
Total Waste Characteristics Score				20	20
<b>3</b> Targets					
Population Within 4-Mile Radius	{ 0 9 12 15 18 <b>21</b> 24 27 30	1		30	21
Distance to Sensitive Environment	0 <b>1</b> 2 3	2		8	2
Land Use	0 1 2 <b>3</b>	1		3	3
Total Targets Score				39	26
<b>4</b> Multiply <b>1</b> x <b>2</b> x <b>3</b>				35,100	23,400
<b>5</b> Divide line <b>4</b> by 35,100 and multiply by 100				S <sub>a</sub> =	66.6

**HRS**

	s	s <sup>2</sup>
Groundwater Route Score (S <sub>gw</sub> )	53.06	2815.36
Surface Water Route Score (S <sub>sw</sub> )	14.54	211.41
Air Route Score (S <sub>a</sub> )	0	0
$S_{gw}^2 + S_{sw}^2 + S_a^2$		3026.77
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		55.01
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		31.8

**WORKSHEET FOR COMPUTING S<sub>M</sub>**

**PRO**

	s	s <sup>2</sup>
Groundwater Route Score (S <sub>gw</sub> )	53.06	2815.36
Surface Water Route Score (S <sub>sw</sub> )	14.54	211.41
Air Route Score (S <sub>a</sub> )	66.6	4444.4
$S_{gw}^2 + S_{sw}^2 + S_a^2$		7471.17
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		86.436
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		49.96

**WORKSHEET FOR COMPUTING S<sub>M</sub>**

SOLVENTS RECOVERY SERVICE OF NEW JERSEY, INC.  
1200 SYLVAN STREET, LINDEN CITY  
UNION COUNTY, NEW JERSEY  
NJD 002182897

Solvents Recovery Service of New Jersey, Inc. (SRS) is a ten acre site located on Sylvan Street in Linden City, Union County, New Jersey. Lying in a heavily industrialized area, SRS is bounded by a railroad spur and Linden Airport to the north, a General Motors plant and Routes 1 & 9 to the west, and Conrail railroad tracks and various industries to the south and east. The nearest residential area is located approximately 800 feet west of the site.

SRS reports operating at the site since 1944. Tax records indicate a variety of property owners of the various lots as recently as 1965. These include United New Jersey Railroad and Canal Co., Industrial Properties Corp., Humble Oil and Refining Co., Garden State Motor Lodge, Inc., Lawrence Germaine Co. and various individuals. It is not known, however, if any of these owners conducted operations on site.

SITE OPERATIONS OF CONCERN

The operations of SRS involve three major processes: solvent recovery, fuel blending and custom distillation. The solvent recovery operation recycles approximately five million gallons of chlorinated and non-chlorinated spent industrial solvents per year. The process involves flash distillation with two thin film evaporators which can each process up to 600 gallons per hour. Approximately 1.3 million gallons of solvent mixtures are custom distilled annually, using fractional distillation processes. Unrecoverable flammable liquids and residuals from SRS's operations are blended into fuel, which is sold for use in cement kilns and steel company blast furnances.

In addition to solvent related operations, SRS serves as a transfer station for drummed solidified hazardous waste, storing the drums for a maximum of ten days. The various chemical wastes SRS is licensed to accept are listed in the Hazardous Waste Facility Permit (Attachment A:19-23).

Crude and recovered solvents are stored in 55 gallon drums or bulk containers, however, blended fuel is stored only in bulk containers such as tanker trucks and storage tanks. Storage tanks, capacities ranging from 1000 to 38,000 gallons are contained by concrete diking. Inspections in the past have reported the diking was cracked and leaking. The recovery area tank farm had an earthen dike extension of the block wall which was apparently used as a lagoon. Until 1987, 55 gallon drums had no secondary containment. Drums were observed to be dented, rusted and leaking. Currently SRS stores all 55 gallon drums in a warehouse approved by the NJDEP. The warehouse has a capacity of 2126 drums of solvents and 250 drums of solid waste for transfer. SRS is allowed to transfer the solid residues from 55 gallon metal drums to smaller plastic or fiber drums prior to shipment to an offsite incinerator.

SRS has had numerous spills and releases. NJDEP files contain reports of air releases of dimethyl acetamide on November 16, 1984, and February 12 and 14, 1986. On November 11, 1974, SRS had a 400 gallon xylene spill. On May 25, 1975, 100 gallons of contaminated groundwater spilled.

SRS reported a spill of dimethyl aniline in wash water on November 27, 1978. NJDEP inspections on April 17, 1979, September 9, 1980, and May 2, 1986 reported evidence of numerous smaller spills.

On October 1, 1981 SRS had a fire and explosion in the flash distillation recovery area. Runoff from fire fighting water washed contaminants to Kings Creek.

On January 19, 1988, the NJDEP issued SRS a final Hazardous Waste Facility permit (#2009C1) jointly with a Discharge to Groundwater Major Modification of NJPDES Significant Industrial User permit (#NJ0002224).

#### GROUNDWATER ROUTE

SRS is underlain by approximately 3 feet of fill. Under this lies approximately 15 to 25 feet of unconsolidated and unstratified clay, silt, sand and gravel of Pleistocene glacial till. Bedrock is the Triassic Brunswick Formation, thinly bedded shales, siltstones and sandstones. The Brunswick Formation ranges in thickness from 6000 to 8000 feet. Depth to groundwater ranges from 5 to 13 feet on site. Groundwater flow is to the southeast towards Kings Creek.

In 1983, Wehran Engineering installed nine monitor wells at various locations in SRS. Most of the wells are shallow, drawing from the glacial deposits. One well, however, reaches the Brunswick Formation. Sampling was conducted on August 24, 1983 by ERM Northeast. Analysis for volatile organics revealed high levels of volatile organic contamination including 1404 ppm methylene chloride, 151 ppm trans-1,2-dichloroethylene, 725 ppm 1,1,1-trichloroethane, 11,000 ppm trichloroethene, 70,000 ppm tetrachloroethylene, 190 ppm 1,1,2,2-tetrachloroethane, 1308 ppm toluene, 70,000 ppm chlorobenzene and 200 ppm naphthalene.

The NJDEP issued SRS a NJPDES permit (#NJ0002224) on January 19, 1988 which requires SRS to install and sample additional groundwater monitoring wells. The permit requires at least six shallow and six deep downgradient wells and two background wells.

The nearest potable wells, belonging to the Rahway Water Department, are located between 2.0 and 2.3 miles west of SRS. At the time of this writing, five of their six wells are temporarily out of service due to contamination. These include two wells drawing from glacial deposits at depths of approximately 51 feet, and three wells drawing from the Brunswick Formation at depths of 76, 127 and 135 feet. Rahway Water Department and their consultant are evaluating the contamination and will decide whether to treat the water or abandon the wells altogether. The remaining active well is located approximately 2.3 miles west of SRS, near the intermediate school, drawing from the Brunswick Formation at a depth of 269 feet.

Elizabethtown Water Company's wells are approximately 2.5 miles north of the site. The wells penetrate to the Brunswick Formation at depths ranging from 321 to 350 feet. Due to their distance and the direction of groundwater flow, these wells are not considered threatened.

Decorator Plastics, Inc. operates the closest industrial well, a 570 foot well approximately 2.7 miles north by northeast of SRS.

#### SURFACE WATER ROUTE

The nearest surface water body to SRS is Kings Creek located Approximately 0.4 miles south of the site. Kings Creek flows southwest into Rahway River approximately 0.9 miles downstream from the site. After 3 miles from SRS, the waters drain into Arthur Kill.

As a result of a fire on October 1, 1981, a large amount of fire fighting runoff entered Kings Creek. The NJDEP Emergency Response Compliance Monitoring Unit sampled site runoff and Kings Creek downstream for volatile organics and petroleum hydrocarbons. Analysis revealed contamination with 16 ppm petroleum hydrocarbons, 19,884 ppm toluene, 3705 ppm trichloroethylene, 618 ppm 1,2,4-trimethylbenzene, 3136 ppm m-xylene and several other volatile organic compounds.

In addition to commercial usage. The Arthur Kill and Rahway River are used for recreational purposes. Surface water in the area is not used for drinking water or irrigation. Approximately 0.6 miles downstream from the site, there is a fresh water wetland area associated with Kings Creek, continuing along the banks of Rahway River.

Rainwater runoff at SRS is processed with their industrial wastewater through a series of settling basins and skimming devices. The treated water formerly discharged via storm sewers to Kings Creek. A memo from the NJDEP dated April 17, 1979 mentioned SRS reported their effluent containing up to 102 ppm chlorinated hydrocarbons, 53 ppm oil and grease, 11,100 ppm TOC and 18,000 ppm BOD. Currently the wastewater is sent to the Linden Roselle Sewerage Authority. The four acres in the rear of the property has no industry. Rainwater runoff flows to Morris Creek and then to the Arthur Kill. As an earthen dike separates the area from the active portion of the property, there is little potential for runoff to contain contamination. The NJDEP determined it is not necessary to issue a permit for this discharge.

#### AIR ROUTE

SRS reported an air release of dimethyl acetamide on February 12, 1986 caused by a leak in the line from the vacuum system to the scrubber in distillation column T-20. On February 14, 1986, the Linden City Police Department investigated a complaint of an odor emanating from SRS. The complaint coincided with their production of dimethyl acetamide. On inspection, however, only a mild odor was detected within the processing area. On November 16, 1984, the Middlesex County Department of Health inspected SRS and detected a fishy, amine type odor near still 22 used to process dimethyl acetamide. No actual air samples were taken following these incidents. Due to the volatile nature of the solvents SRS handles, there is continually a potential threat of air release.

The NJDEP surveyed SRS using an HNu photo ionization detector (calibrated to isobutylene, span set at 2) on May 1, 1984. It was noted the meter would occasionally go off scale briefly due to the presence of passing pockets of process fumes brought by the wind. Ambient air was otherwise generally 6 ppm. During a RCRA Compliance Inspection on May 2, 1986, a Photovac TIP was used to monitor ambient air. Between the fuel blending and recovery areas, the TIP detected 100 ppm in the breathing zone (read as benzene).



On October 1, 1981, SRS had a fire and explosion involving two stills, eight storage tanks and approximately two hundred 55 gallon drums. Solvents possibly involved included MEK, MIBK, acetone, toluene, benzene, xylene, mineral spirits, alcohols, esters, ethyl acetate and di-ethyl amine. Inspectors from Ecology and Environment, Inc. reported HNu and detector tube readings of 50 ppm toluene and other solvents near the fire zone.

The Department of Environmental Quality has issued SRS (facility #40097) 93 stack permits which expire in 1992.

#### SOIL

SRS reported soil analyses were conducted on five occasions between June 1980 and May 1982. Additional soil samples were submitted to the NJDEP in May 1983, December 1983, January 1984, August 1984 and March 1985.

SRS had an unlined lagoon which received runoff and spillage from one of the process areas. The pit may have contained isopropyl alcohol and toluene. As a result of a Notice of Prosecution dated July 20, 1981, SRS removed contaminated soil from this area on May 25, 1982. However, it is not determined if the excavation was adequate.

Soil was sampled in 1983 by ERM-NE in order to determine the type of remedial action necessary prior to SRS constructing their drum storage warehouse. Results showed contamination with 36,700 ppm toluene, 18.4 ppm ethyl benzene, greater than 1100 ppm methylene chloride, 316 ppm tetrachloroethylene, 299 ppm chlorobenzene, 601 ppm trichloroethylene, and 14,344 ppm oil and grease. Contaminated soil in the area of the warehouse was removed as a result of an Administrative Consent Order dated April 4, 1985.

Site inspections at SRS on April 17, 1979, August 21, 1980 and May 2, 1986 noted several smaller areas of stained and/or visibly contaminated soil. The NJDEP received results from 15 soil borings on December 24, 1983. Analysis by an unknown laboratory indicated soil contamination in various parts of the facility. In the central portion of the site, results included 941 ppm 1,1,1-trichloroethane, 285 ppm trichloroethylene, 1682 ppm toluene, 136 ppm chlorobenzene, 653 ppm ethylbenzene and several other volatile organic compounds.

SRS plans to conduct a soil assessment to satisfy the requirements of the HWF and NJPDES permits.

#### DIRECT CONTACT

There were two minor injuries associated with the fire on October 1, 1981. Otherwise there are no reported incidents of direct contact with hazardous materials on site. The site is surrounded by a chain link fence and has workers present 24 hours a day. The nearest population is approximately 0.2 miles west of the site. Nearby residents have complained of dimethyl acetamide odors emanating from SRS. SRS employees may be exposed to solvents via vapors released during operations.

#### FIRE AND EXPLOSION

On October 1, 1981, SRS had an explosion caused by an uncontrolled exothermic reaction in Still Number 11 processing waste acetone. The resultant fire involved two stills, eight storage tanks and approximately

two hundred 55 gallon drums. Solvents involved in the incident included MEK, MIBK, acetone, benzene, toluene, mineral spirits, alcohols, esters, ethyl acetate, xylene and dimethyl amine. The NJDEP was not notified of the incident by SRS or the local fire or police, but responded to the news report. There were two minor injuries associated with the incident.

Fire fighting runoff washed solvents into Kings Creek. Air monitoring was performed by local, state and federal agencies. Inspectors for Ecology and Environment, Inc. reported HNu and detector tube readings of 50 ppm of toluene and other solvents near the fire zone. Measurements were occasionally hindered by the fire water.

Due to the flammable nature of materials processed on site, SRS could potentially have another fire or explosion.

#### ADDITIONAL CONSIDERATIONS

There is no reported damage to flora or fauna at SRS. There may potentially have been damage to flora and fauna as a result of the contamination of Kings Creek through SRS's former discharge and through fire fighting runoff on October 1, 1981. Stormwater runoff currently is treated onsite and discharged to Linden Roselle Sewerage Authority. However, the Sewerage Authority has complained of SRS frequently exceeding ordinance limits.

#### ENFORCEMENT ACTIONS

Enforcement actions against SRS have included the following:

- Notice of Violation dated February 19, 1974.  
SRS released effluent without a permit.
- Lawsuit: NJDEP vs SRS  
Arose out of a spill on May 22, 1975.
- Notice of Violation dated July 11, 1975.  
SRS failed to have federal SPCC plan.
- Notice of Prosecution dated July 25, 1978.  
SRS refused to file manifests deemed confidential.
- Notice of Prosecution dated July 20, 1981.  
SRS operated in area other than in engineering designs.
- Notice of Prosecution dated July 20, 1981.  
SRS required to remove contaminated soil.
- Administrative Consent Order dated November 12, 1981.  
Arose from a fire and explosion on October 1, 1981.
- Notice of Violation  
Linden Roselle Sewerage Authority cited SRS for numerous violations.
- Administrative Consent Orders dated July 1982, October 1983, April 1985 and August 1985.  
SRS required to excavate contaminated soils.

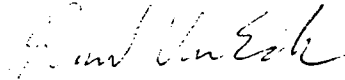
On January 19, 1988, the NJDEP issued SRS a final Hazardous Waste Facility Permit (2009C1) and Major Modification of NJPDES-SIU Permit (#NJ0002224). These permits replace the ACO's under which the facility formerly operated.

RECOMMENDATIONS

The final HWF and NJPDES permits require SRS to install and monitor more wells and implement a soil assessment plan. The soil assessment plan may only assess contamination "in existing permeable areas". This plan could potentially exclude areas paved subsequent to spillage. SRS should perform the soil and groundwater assessments under NJDEP supervision.

The site is assigned a high priority for remedial action, but due to the HWF and NJPDES permits, no further action by the Bureau of Planning and Assessment is deemed necessary at this time.

Submitted by:



David Van Eck, HSMS IV  
NJDEP/DHWM/BPA